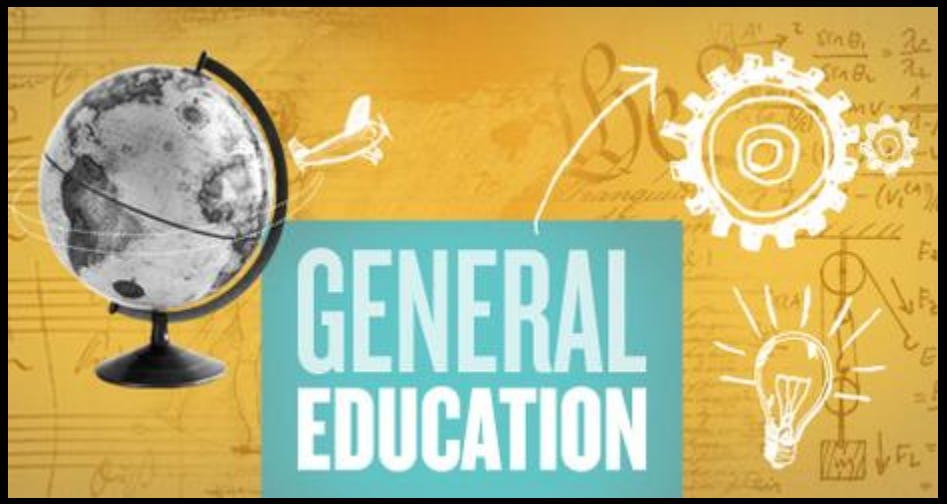


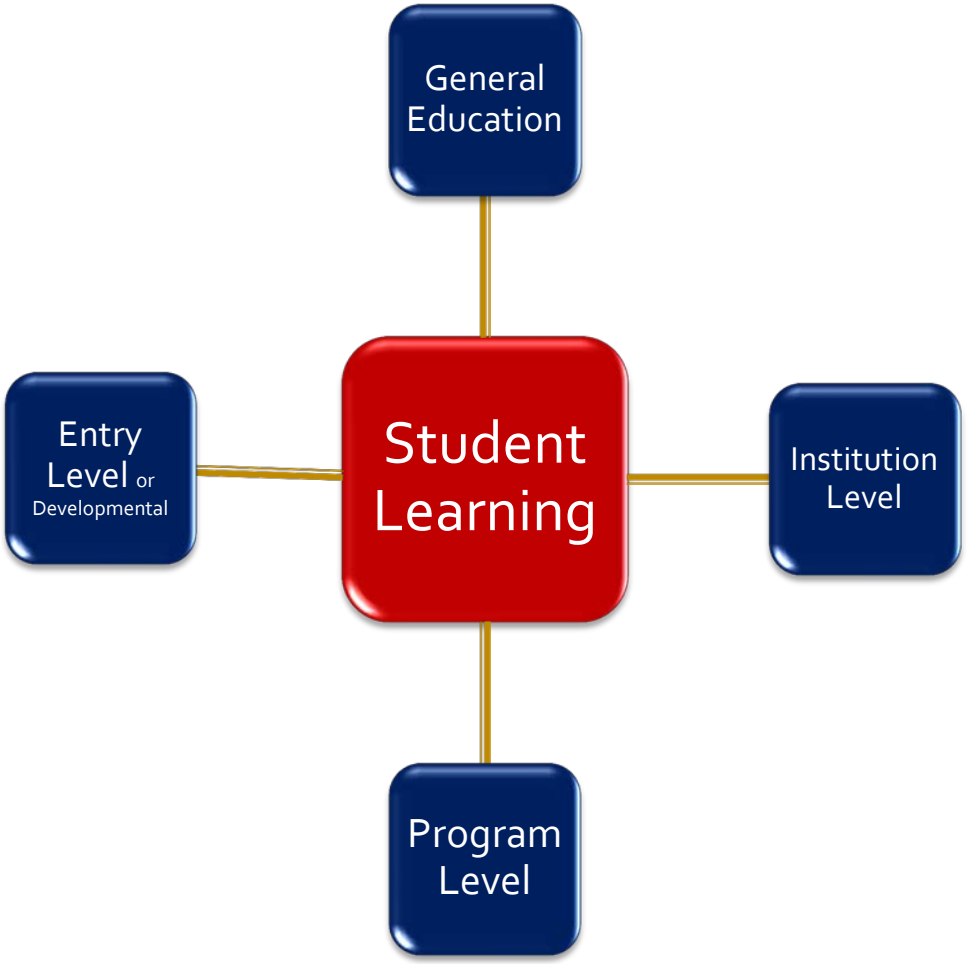
RSU General Education: Measuring Student Proficiency

Using ETS Proficiency Profile

M. Millikin, Accountability and Academics, April 12, 2013

The photo below, taken during a protest of the Beijing Olympics in 2008, provides an excellent case for general education.

Student Learning Outcomes

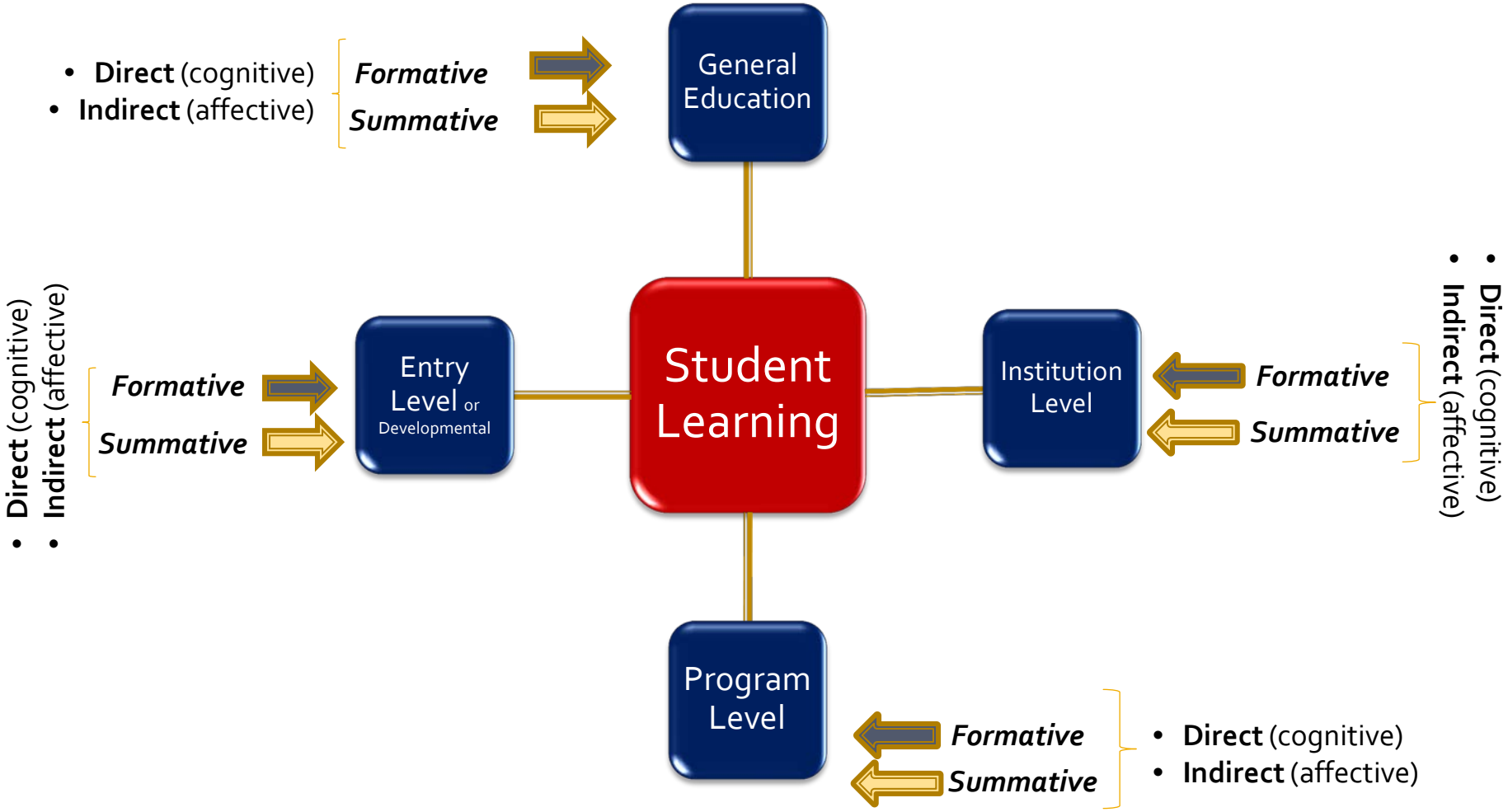


RSU Strategic Plan: *Goals*

- **Academic Excellence** ←Student Learning: General Education
- **Enrollment Management** ←Student Learning: General Education
- **Diversity** ←Student Learning: General Education
- **Resources** ←Student Learning: General Education
- **Accountability** ←Student Learning: General Education
- **Community Engagement** ← Student Learning: General Education

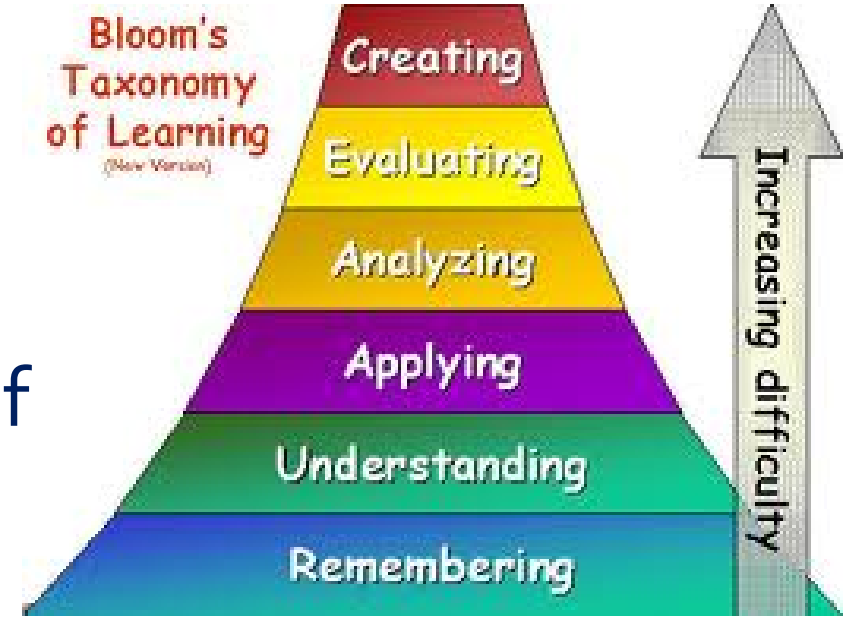
Source: Rogers State University Strategic Plan

Measuring Student Learning Outcomes



RSU's General Education SLOs

1. Acquire and evaluate information.
2. Analyze and integrate knowledge.
3. Develop perspectives and an understanding of the human experience.
4. Communicate effectively.

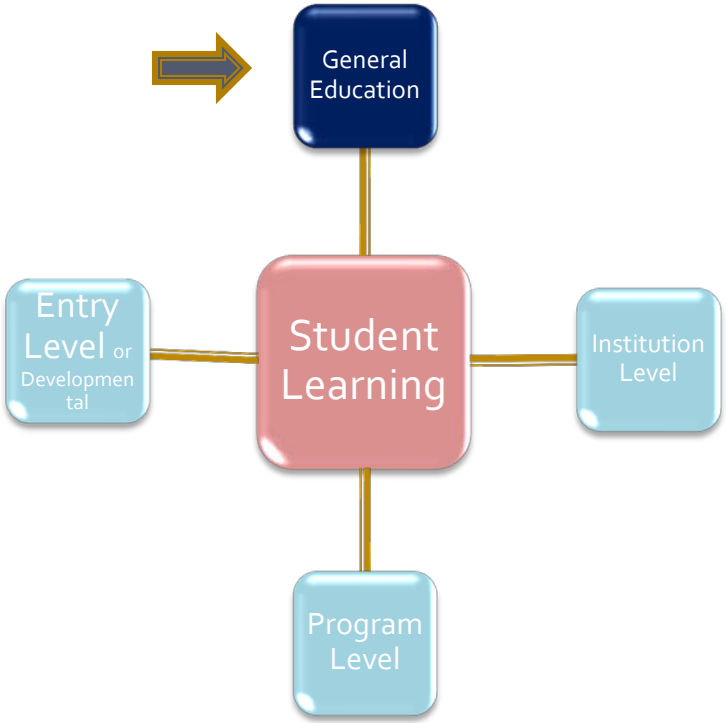


Refer to Section II of Annual Student Assessment Report for 2011-2012 to OSRHE

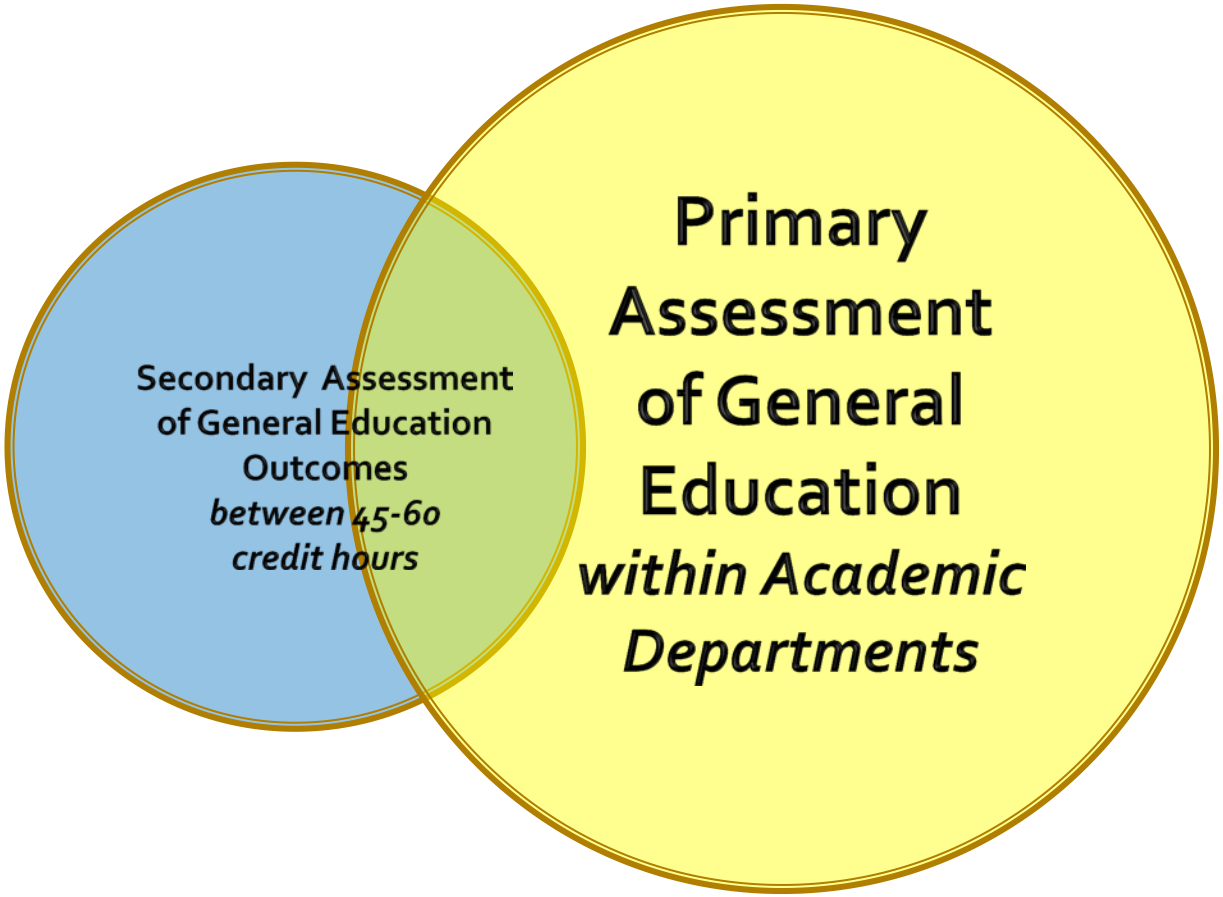
Evaluating General Education Outcomes

<u>OSHRE requirement</u>:

- Evaluate student progress in general education **formatively** (between 45 and 60 credit hours)
- Report annually



Assessing General Education Proficiency



Research Question

- ***Are RSU students learning to think critically, read and write at appropriate levels?***
  - "Appropriate levels" is operationally defined as scores on the ETS Proficiency Profile equivalent with other bachelor's degree-conferring institutions.
  - Formative measure occurring between 45 and 60 credit hours (OSHRE definition)

ETS: Educational Testing Service

RSU's General Education SLOs

RSU Gen Ed SLOs

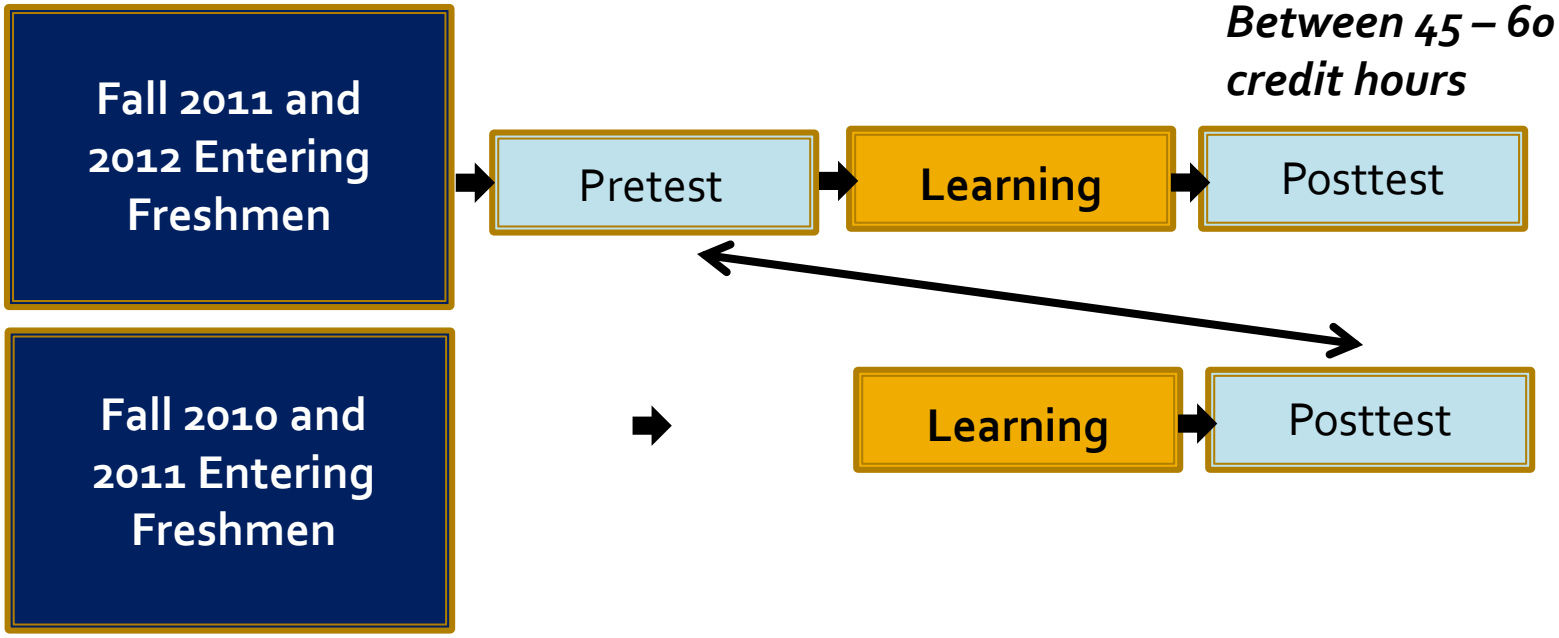
1. Acquire and evaluate information.
2. Analyze and integrate knowledge.
3. Develop perspectives and an understanding of the human experience.
4. Communicate effectively.

ETS Proficiency Profile Factors

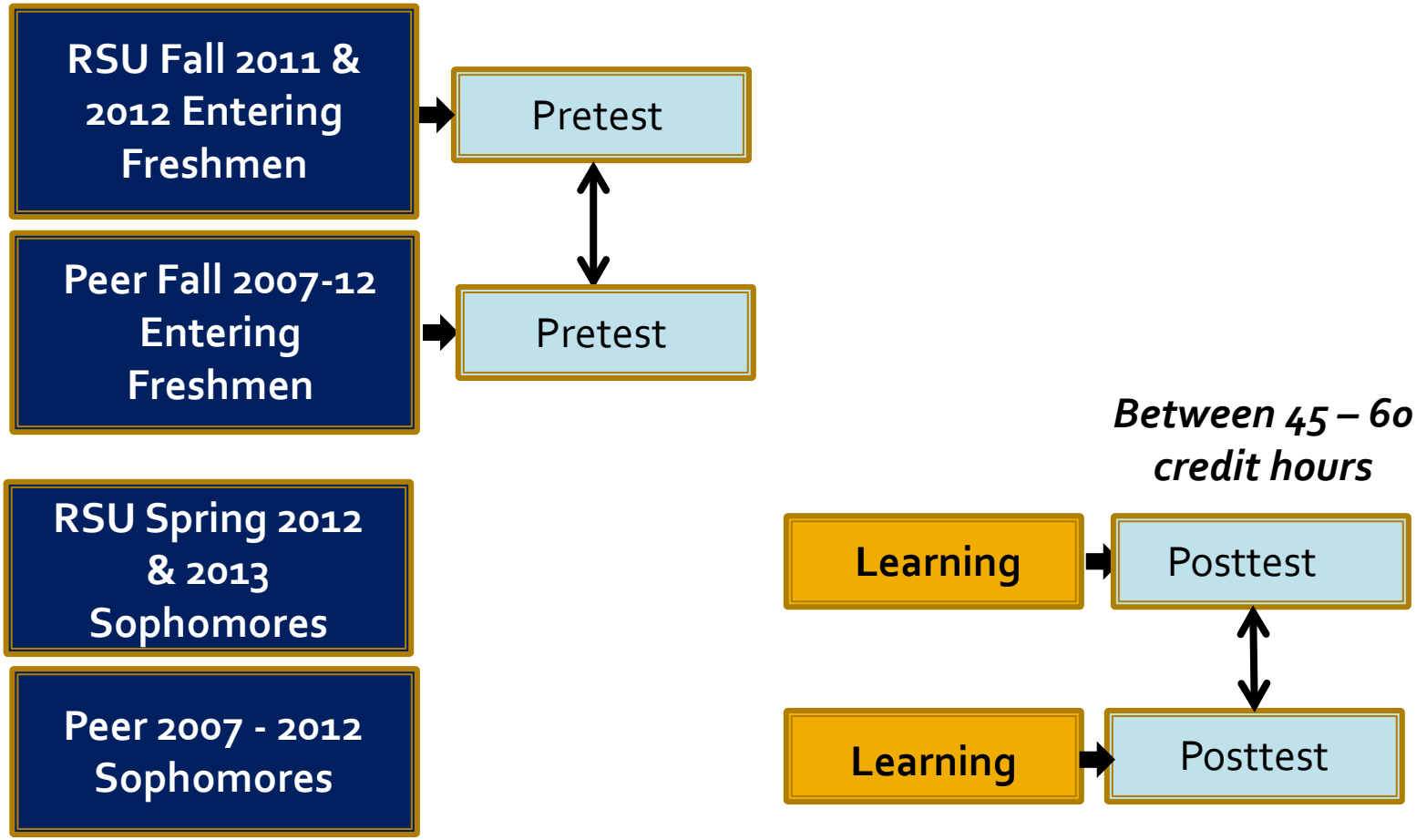
1. Reading
2. Writing
3. Mathematics
4. Critical Thinking

Research Design

Repeated Measures Design



Peer Analysis (Normative)



RSU Sample: Pretest

- Students with no General Education
- **Fall 2011 and Fall 2012 first-time freshmen**
  - No transfer hours
  - No concurrent enrollment hours
  - No 100% online
  - No Bartlesville
  - **Fall 2011: 110 students randomly selected from 472 entering freshmen* (baccalaureate and associate)**
    - N = 80 participants (one not completed) or 73% response rate
  - **Fall 2012: 94 students identified (baccalaureate only)**
    - N = 69 participants or 73% response rate
    - 70 students needed for 95% confidence level
  - **Incentive of $10 on Hillcat Card; enrollment hold**

**Based on capacity of Testing Center*

RSU Sample Posttest

- Students with General Education at RSU
  - **Spring 2012 sophomores**
    - Had 45 – 60 credit hours including Spring 2012
    - Did not transfer to RSU
    - Did not earn concurrently enrolled credits in high school
    - Were not 100% online
  - **Spring 2012: 120 students randomly selected from 141 eligible**
    - 93 needed for 90% confidence level
    - N = 17 participants or 14% response rate
  - **Spring 2013: 70 students identified**
    - N = 55 or 79% response rate (60 needed for 95% confidence level)
  - **Incentive of $10 on Hillcat card; enrollment hold added spring 2013**

**Based on capacity of Testing Center (two additional computers available)*

Time and Place of Testing

- Entering Freshmen Testing
  - Campus Testing Centers
  - August – September (or until completed)
- Sophomore Testing
  - Campus Testing Centers
  - January – February

    (or until March 31)

Peer Institutions in ETS Proficiency Profile Database (July 2007-June 2012)*

- **Select peers by number and type of institutions in database**
  - Entering Freshmen: Public Baccalaureate institutions only (July 2007 – June 2012)
    - 19 Institutions
    - 28,741 students ($RSU_{fall2012}$ n= 69; $RSU_{fall2011}$ n=79**)
  - Sophomores: Public Baccalaureate institutions only
    - 15 Institutions
    - 27,664 students ($RSU_{spring2013}$ n = 55; $RSU_{spring2012}$ n=17)

**Must select at least 10 institutions.* ***Included associate degree-seeking students*

Peer Institutions - Freshmen

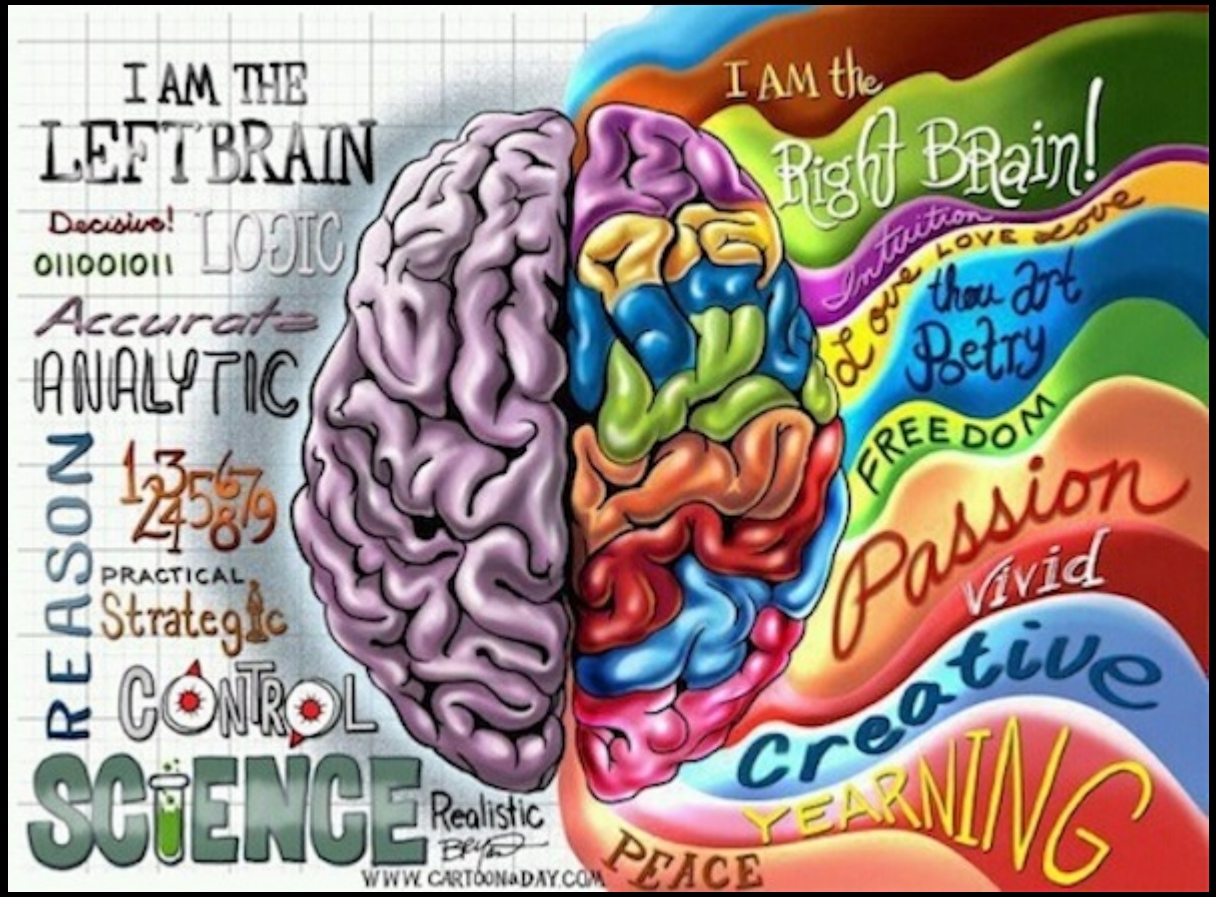
Mean size = 1,513 of institution cohort bank

- Athens State University (AL)
- Coastal Carolina University (SC)
- Colorado State University Pueblo (CO)
- Dickinson State University (ND)
- Elizabeth City State University (NC)
- Lander University (SC)
- Lewis-Clark State (ID)
- Lock Haven University (PA)
- Metropolitan State College of Denver (CO)
- Missouri Southern State University (MO)
- Missouri Western State University (MO)
- Shawnee State University (OH)
- Shepherd University (WV)
- University of Maine – Fort Kent (ME)
- University of Maine – Presque Isle (ME)
- University of South Carolina – Aiken (SC)
- University of South Carolina – Upstate (SC)
- West Virginia University - Parkersburg (WV)
- Winston-Salem State University (NC)

Peer Institutions – Sophomores

Mean size = 1,848 of institution cohort bank

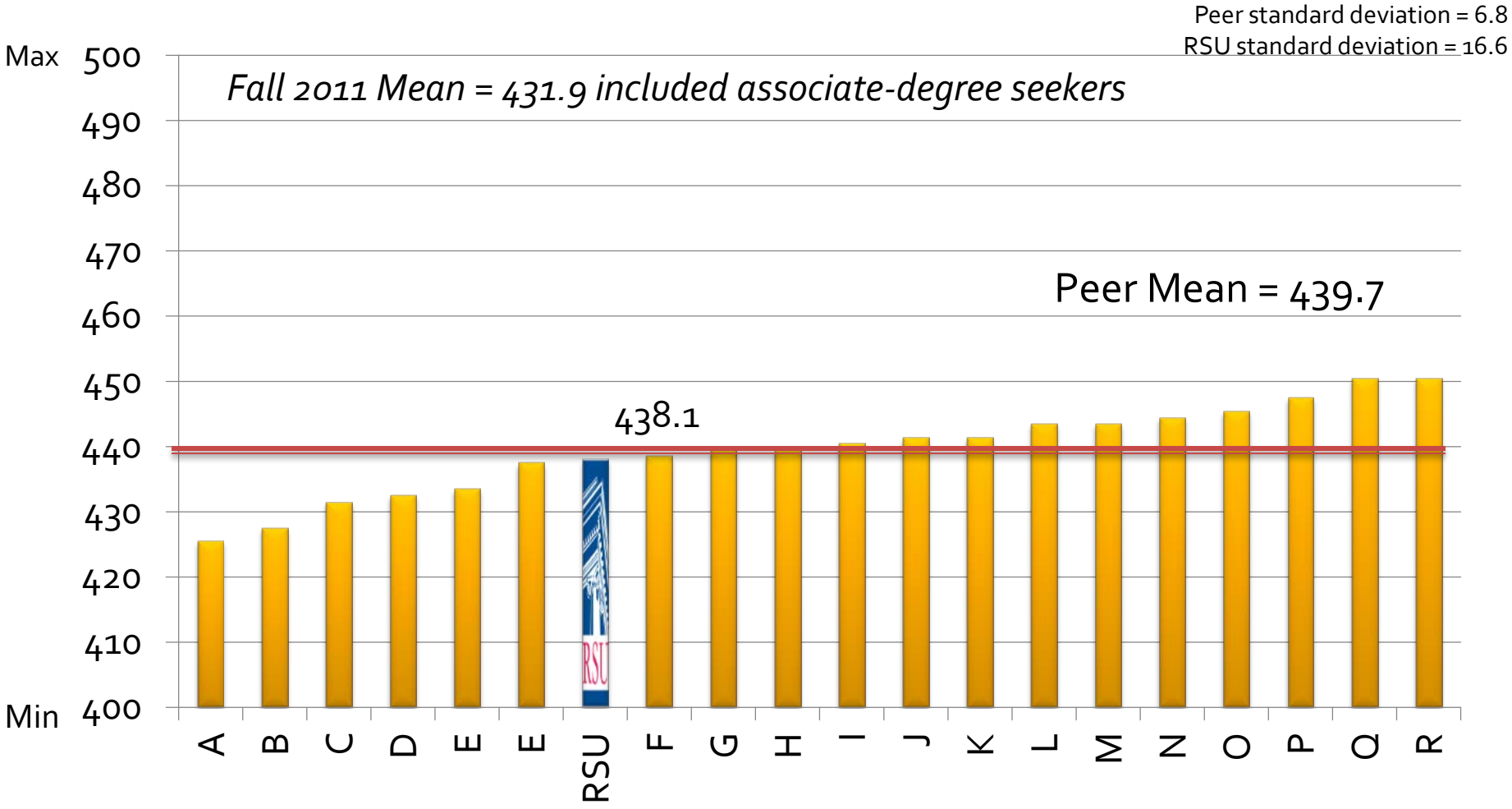
- Athens State University (AL)
- Coastal Carolina University (SC)
- Colorado State University Pueblo (CO)
- Dickinson State University (ND)
- Elizabeth City State University (NC)
- Lander University (SC)
- Metropolitan State College of Denver (CO)
- Missouri Southern State University (MO)
- Missouri Western State University (MO)
- Shawnee State University (OH)
- Shepherd University (WV)
- University of South Carolina – Aiken (SC)
- University of South Carolina – Upstate (SC)
- West Virginia University - Parkersburg (WV)
- Winston-Salem State University (NC)


I AM THE
LEFT BRAIN
Decisive!
01100101 1
LOGIC
Accurate
ANALYTIC
REASON
1 2 3 5 6 7
2 4 5 8 9
PRACTICAL
Strategic
CONTROL
SCIENCE
Realistic
WWW.CARTOONADAY.COM
I AM the
Right BRain!
Intuition
LOVE
Love
thou Art
Poetry
FREE DOM
Passion
Vivid
Creative
YEARNING
PEACE

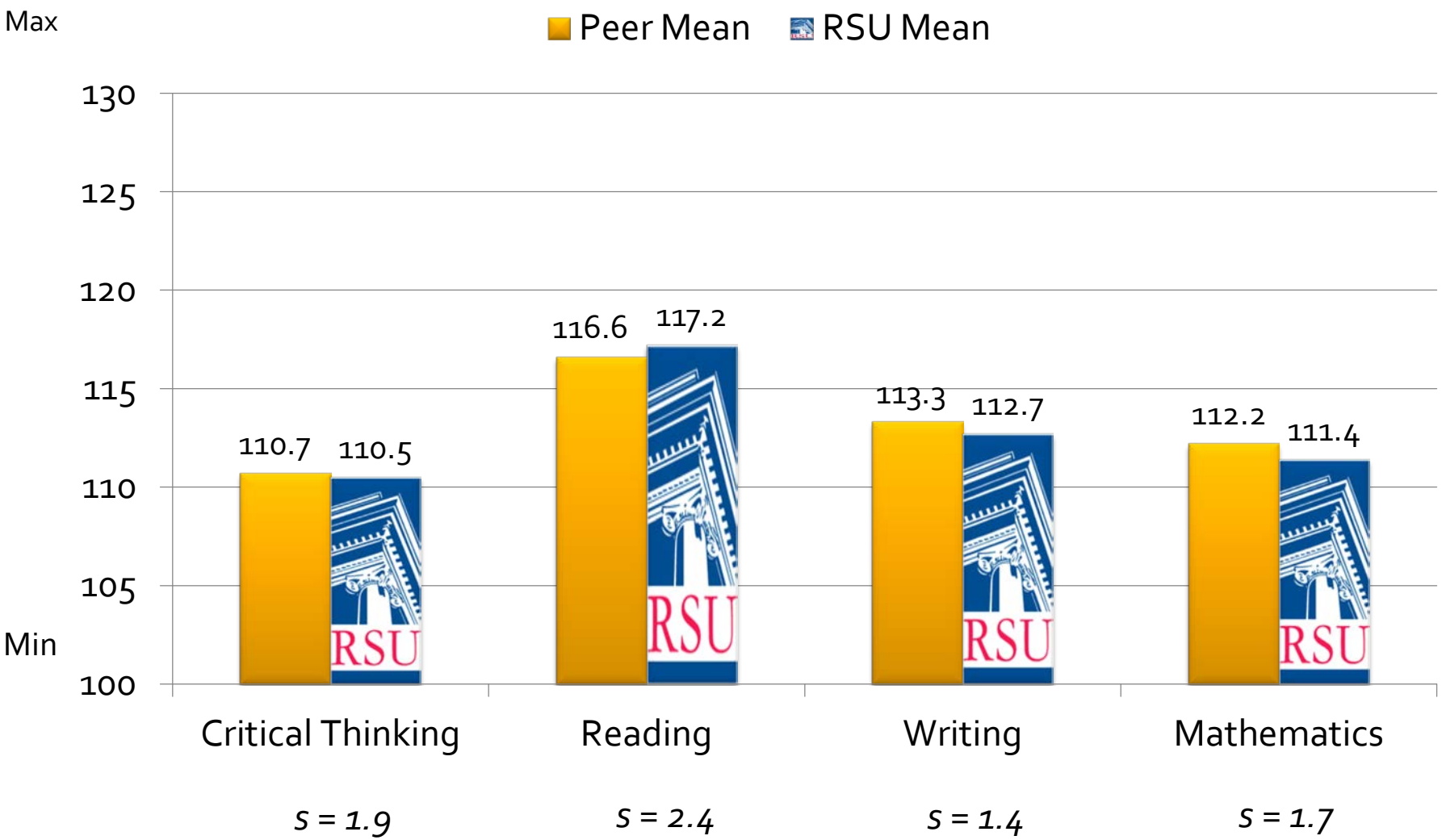
How did we do?

Entering Freshmen

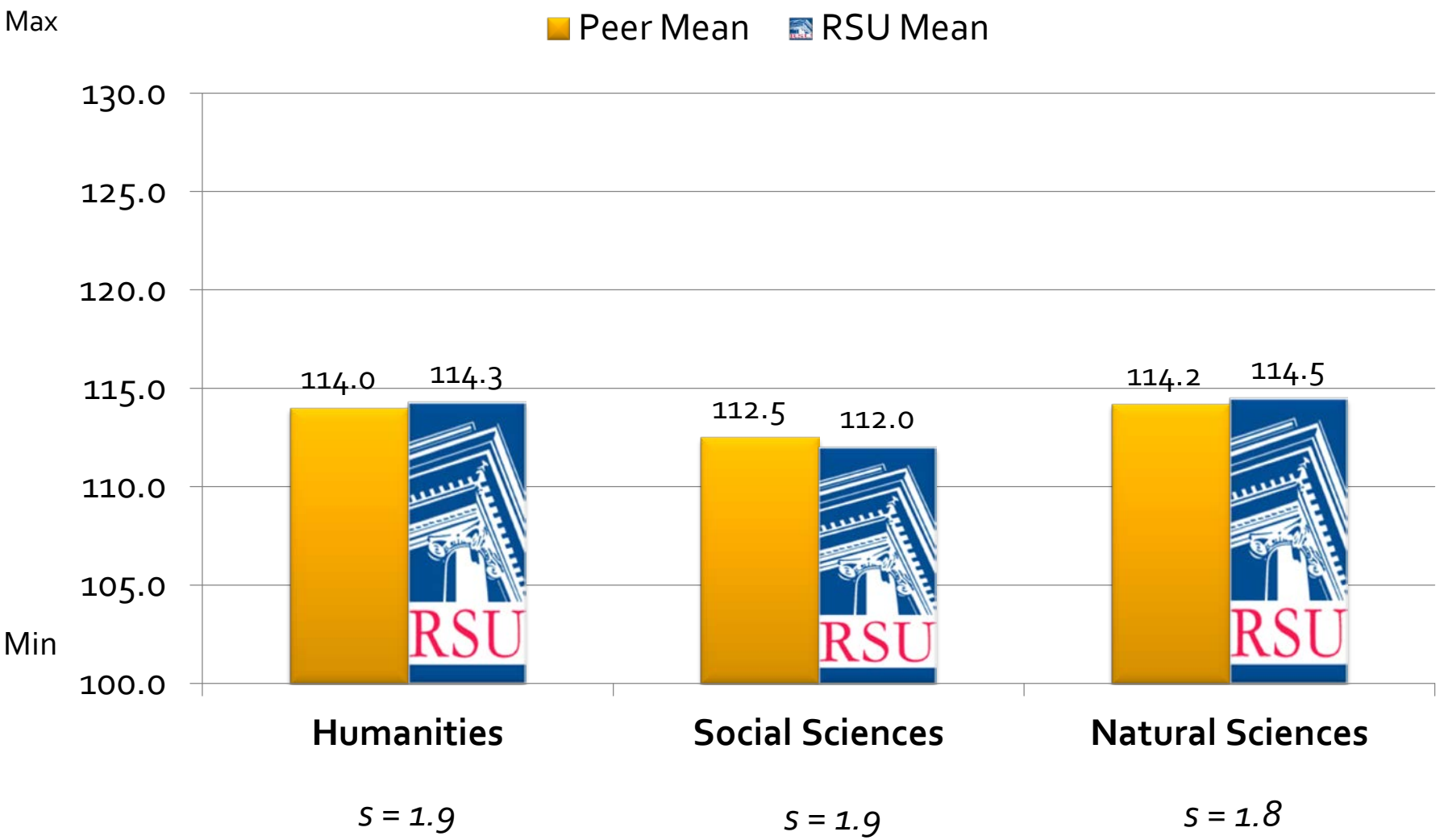
Entering Freshmen: RSU and Peers
Total Score Distribution



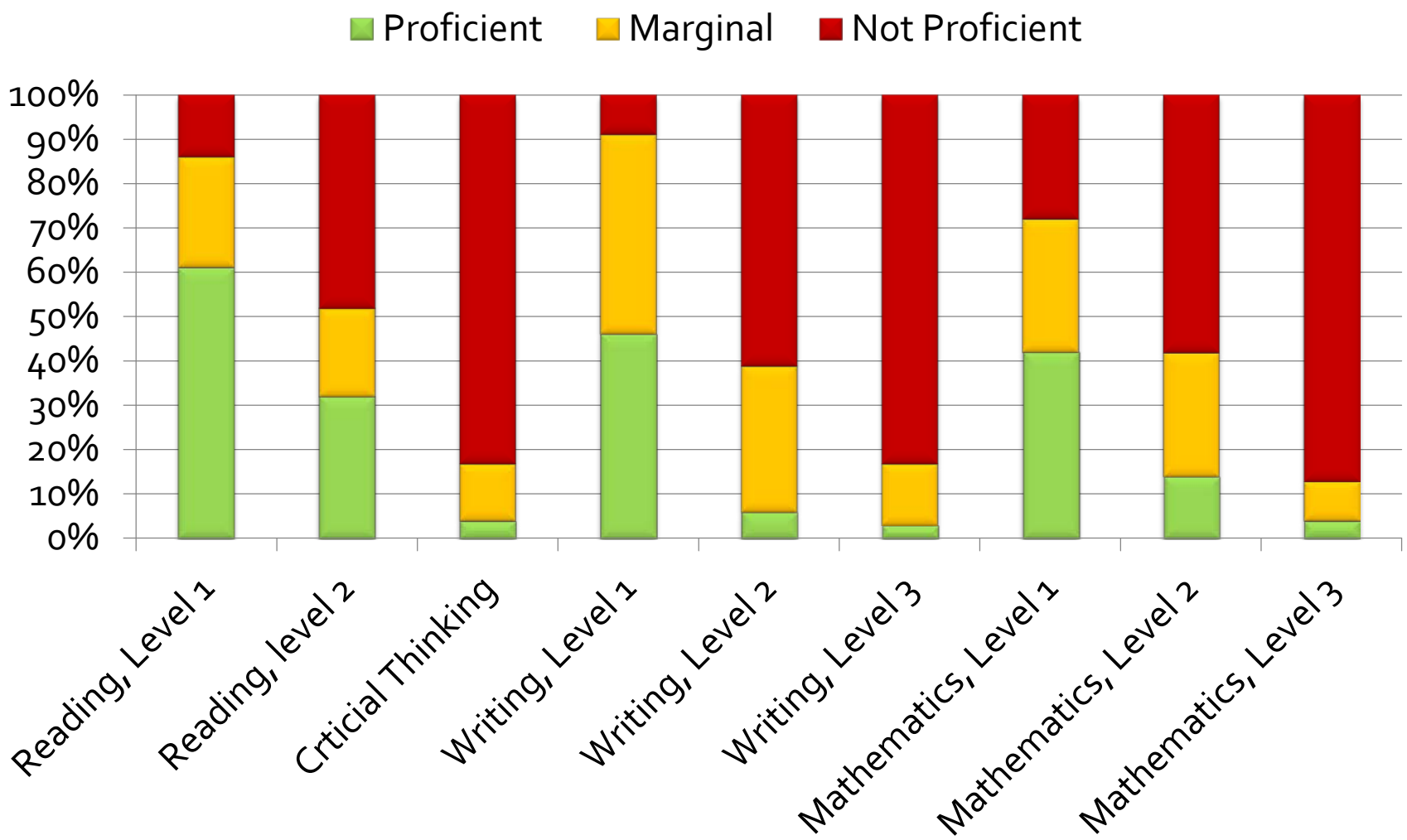
Entering Freshmen: RSU and Peers
Skills Subscores



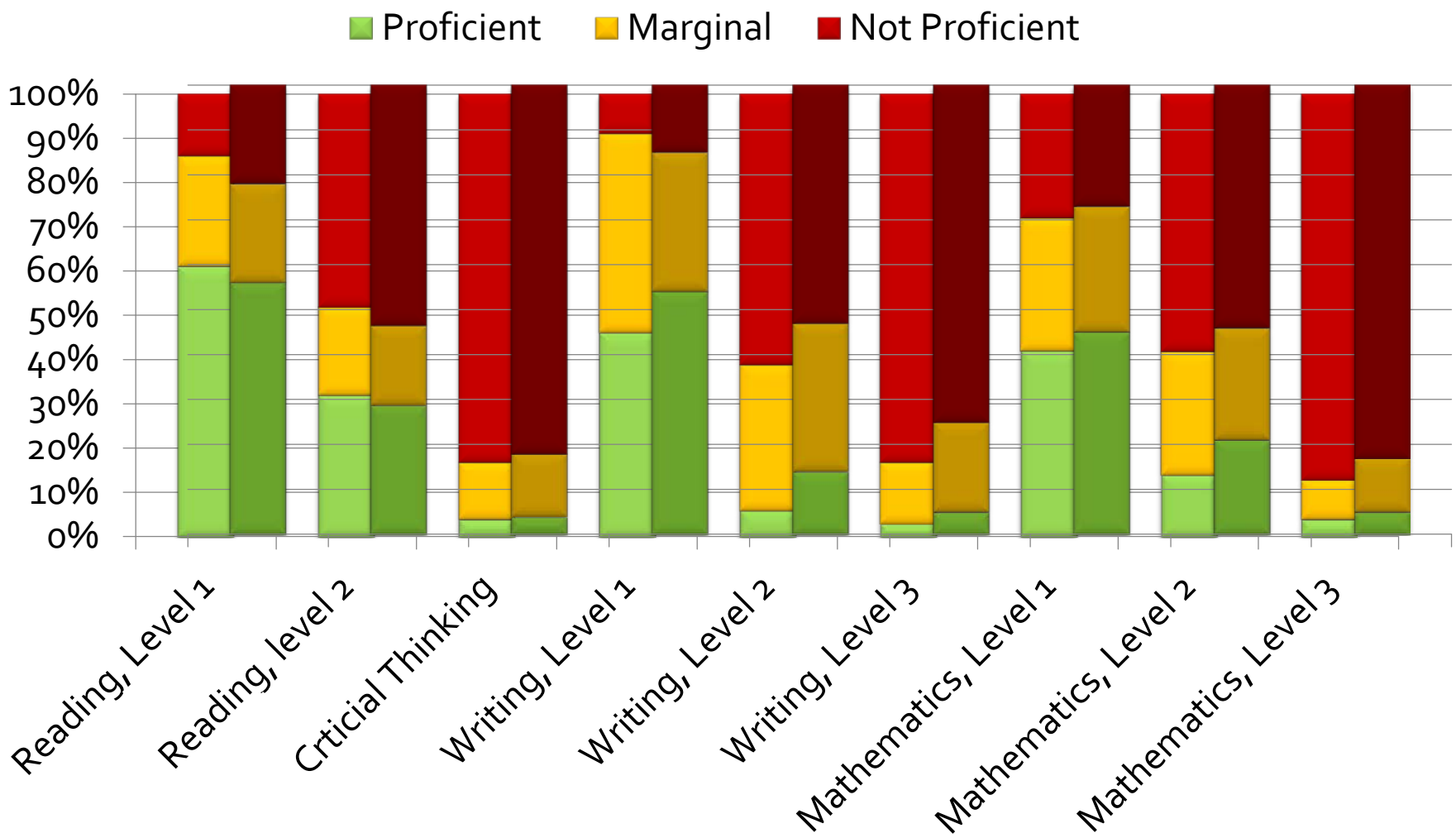
Entering Freshmen: RSU and Peers
Context-based Subscores



Summary of Proficiency Classifications RSU Fall 2012 Entering Freshmen



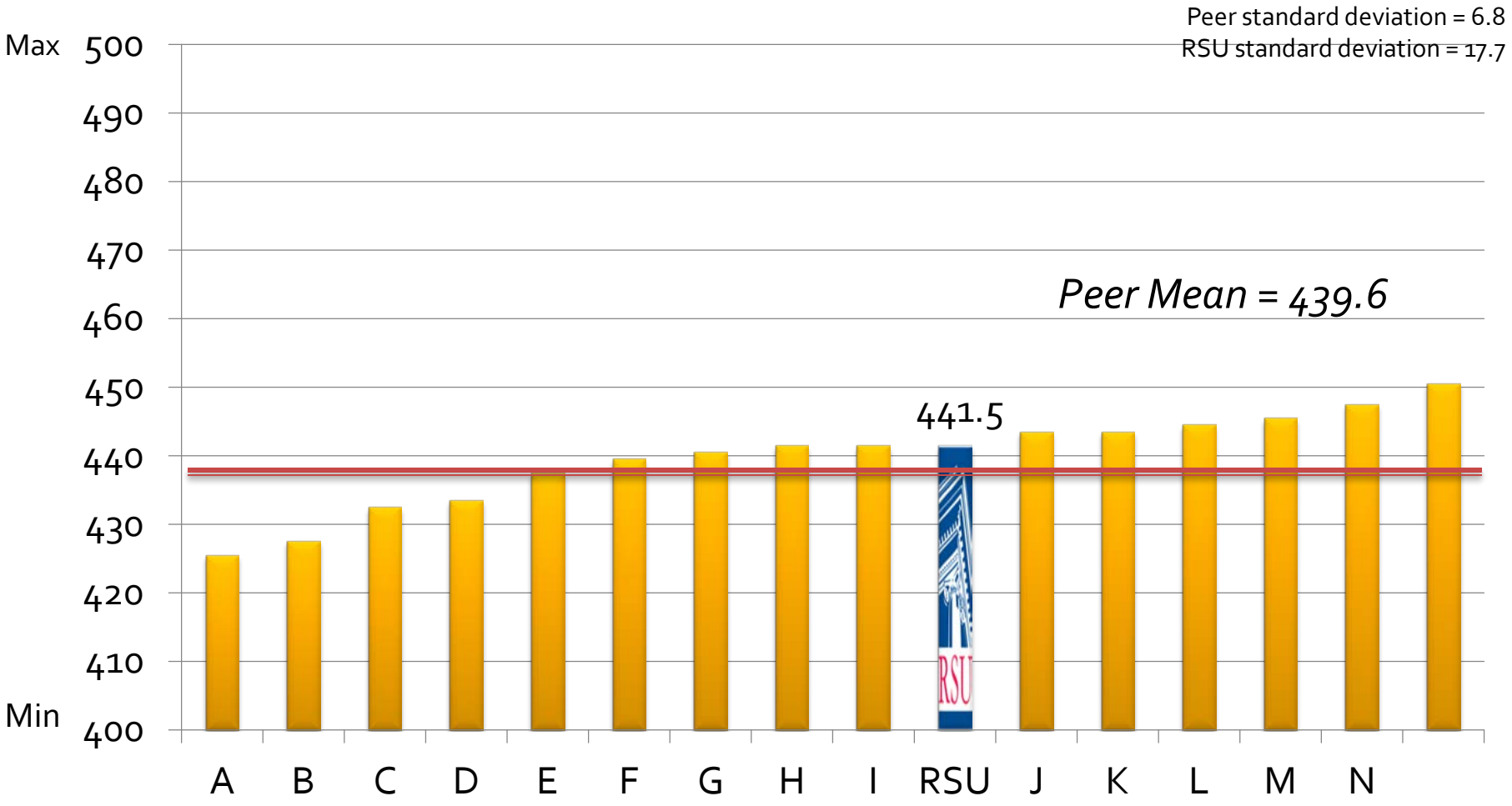
Summary of Proficiency Classifications RSU and Peer Entering Freshmen



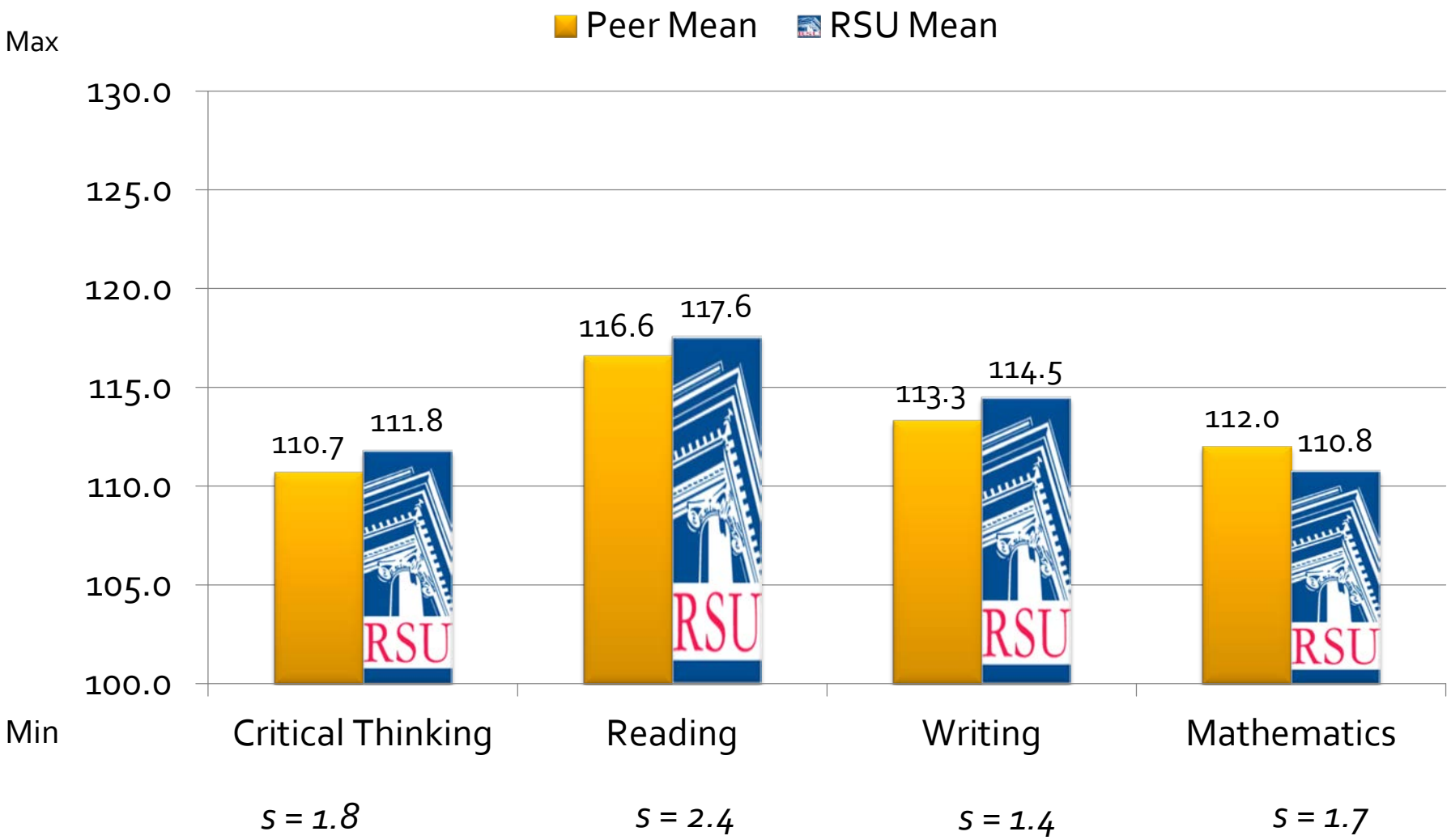
RSU classifications are bright colors ; Peer classifications are darker colors

Sophomores

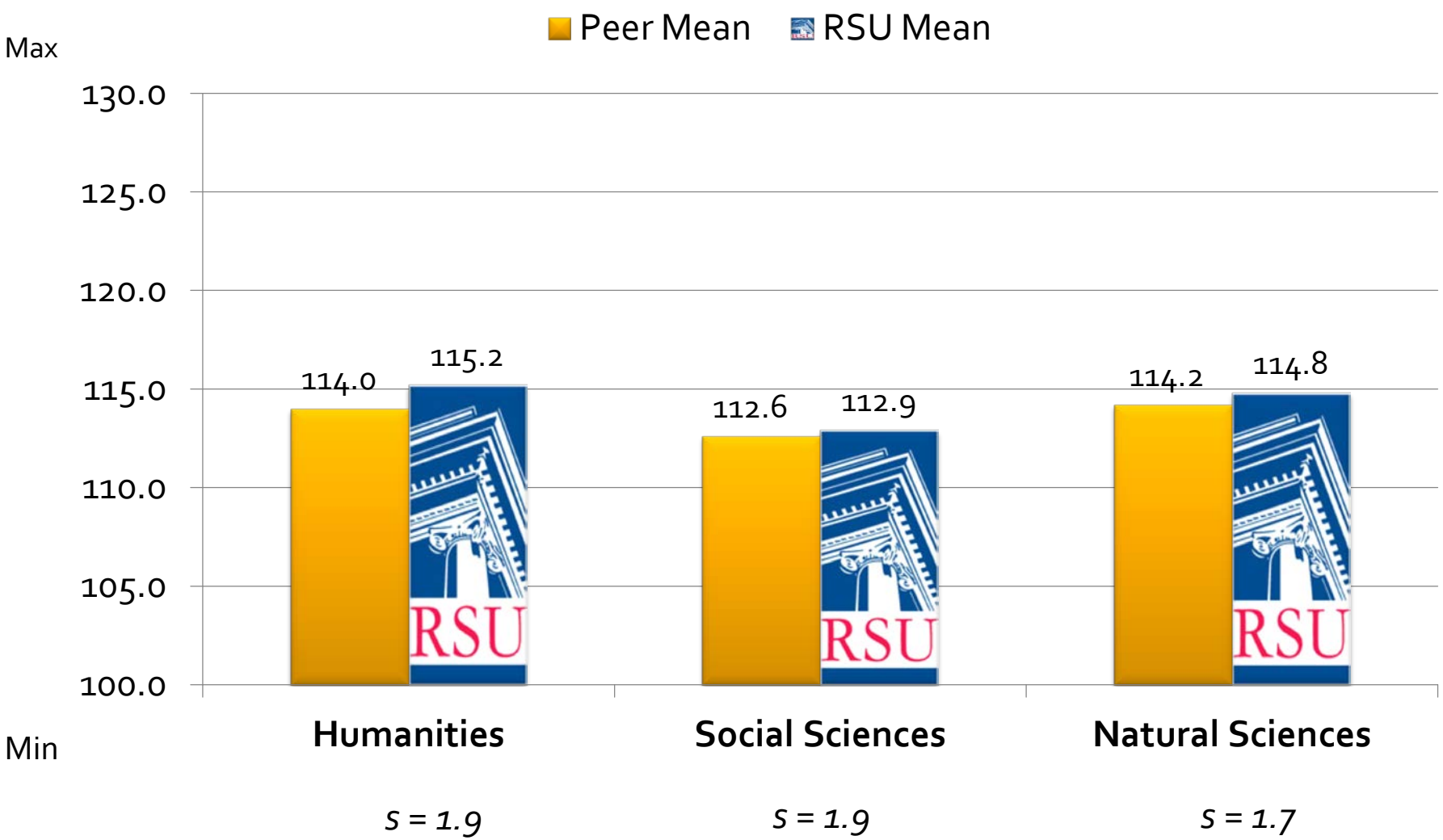
Sophomores: RSU and Peers
Total Score Distribution



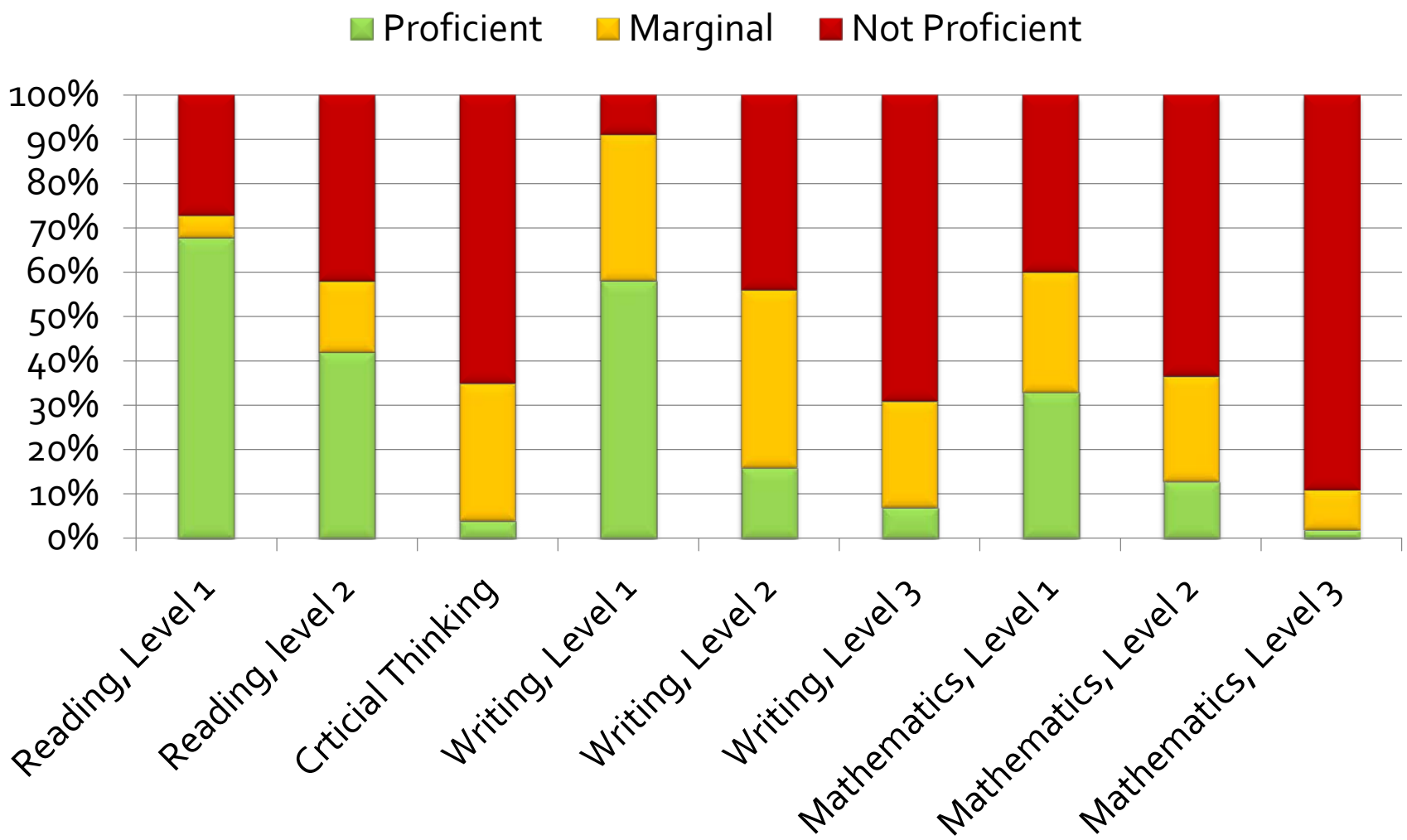
Sophomores: RSU and Peers
Skills Subscores



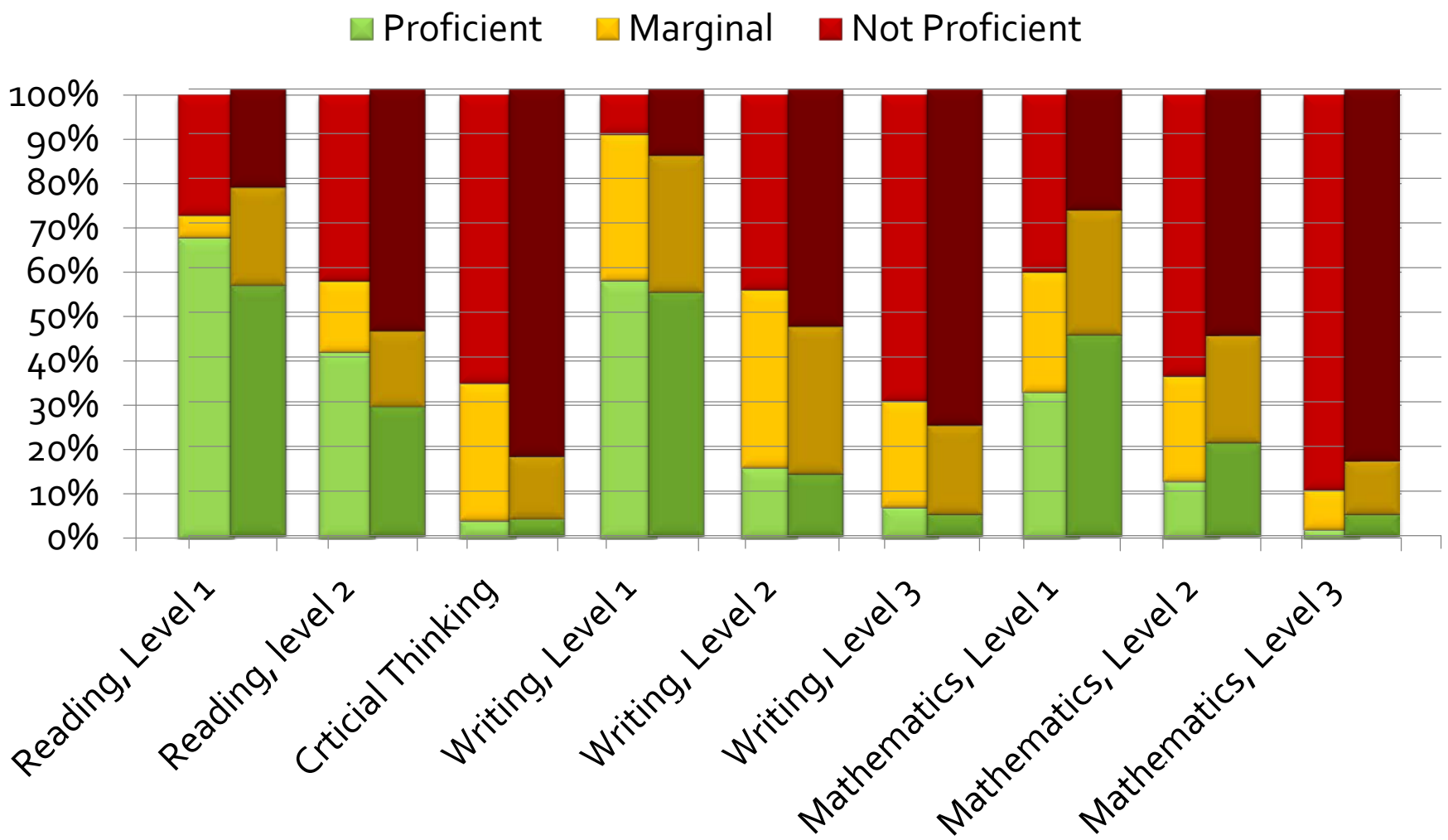
Sophomores: RSU and Peers
Context-based Subscores



Summary of Proficiency Classifications RSU Spring 2013 Sophomores



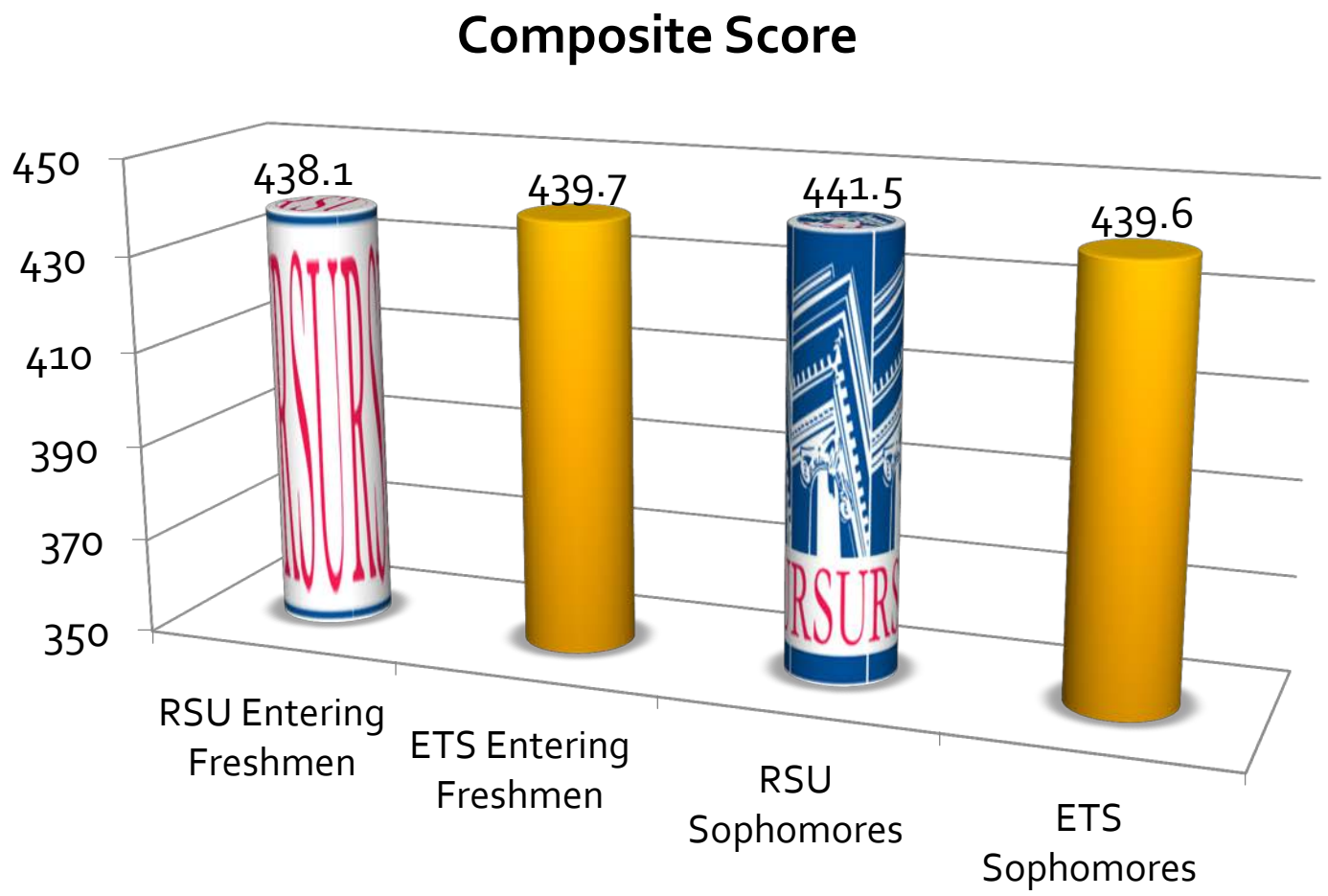
Summary of Proficiency Classifications RSU and Peer Sophomores



RSU classifications are bright colors ; Peer classifications are darker colors

Freshman to Sophomore Comparison

ETS Proficiency Profile Score



*ETS database for Baccalaureate Colleges only

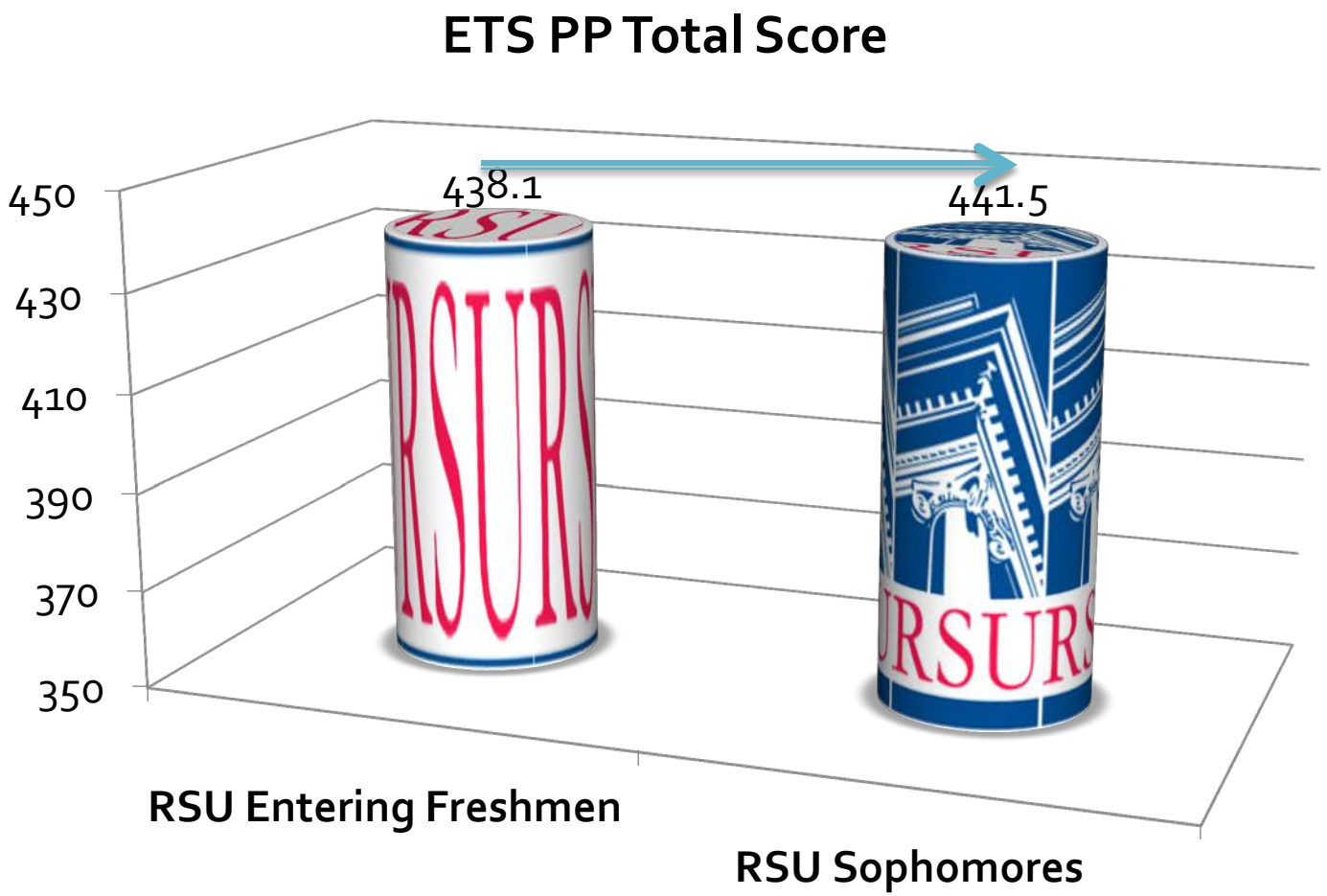
Comparison of RSU Entering Freshmen to Sophomores

RSU Cohort	N	ACT Composite
RSU Fall 2011 Freshmen	79	19.7
RSU Spring 2012 Sophomores	17	22.1
RSU Fall 2012 Freshmen	69	21.5
RSU Spring 2013 Sophomores	54	21.8

Comparison of RSU Entering Freshmen to Sophomores

Is there a difference in ETS PP total scores between RSU freshmen and sophomores when controlling for ACT?

ETS Proficiency Profile Score



Summary and Conclusions

- Likely generalizable samples of Freshmen and Sophomores
  - Trust but verify
- RSU students enter as freshmen on par with normative database
- RSU sophomores have greater gains than normative sample
- RSU sophomores experience increases in general education accounting for ACT

Recommendations

- Continue testing with increased sample sizes
- Test exiting seniors


Q&A

Proficiency Levels: Reading and Critical Thinking

- **Level 1 -** Students who are proficient can:
  - recognize factual material explicitly presented in a reading passage
  - understand the meaning of particular words or phrases in the context of a reading passage
- **Level 2 -** Students who are proficient can:
  - synthesize material from different sections of a passage
  - recognize valid inferences derived from material in the passage
  - identify accurate summaries of a passage or of significant sections of the passage
  - understand and interpret figurative language
  - discern the main idea, purpose or focus of a passage or a significant portion of the passage

Proficiency Levels: Reading and Critical Thinking

- **Level 3/Critical Thinking -** Students who are proficient can:
  - evaluate competing causal explanations
  - evaluate hypotheses for consistency with known facts
  - determine the relevance of information for evaluating an argument or conclusion
  - determine whether an artistic interpretation is supported by evidence contained in a work
  - recognize the salient features or themes in a work of art
  - evaluate the appropriateness of procedures for investigating a question of causation
  - evaluate data for consistency with known facts, hypotheses or methods
  - recognize flaws and inconsistencies in an argument

Proficiency Levels: Writing Skills

- **Level 1 -** Students who are proficient can:
  - recognize agreement among basic grammatical elements (e.g., nouns, verbs, pronouns and conjunctions)
  - recognize appropriate transition words
  - recognize incorrect word choice
  - order sentences in a paragraph
  - order elements in an outline
- **Level 2 -** Students who are proficient can:
  - incorporate new material into a passage
  - recognize agreement among basic grammatical elements (e.g., nouns, verbs, pronouns and conjunctions) when these elements are complicated by intervening words or phrases
  - combine simple clauses into single, more complex combinations

Proficiency Levels: Writing Skills

- **Level 3 -** Students who are proficient can:
  - discriminate between appropriate and inappropriate use of parallelism
  - discriminate between appropriate and inappropriate use of idiomatic language
  - recognize redundancy
  - discriminate between correct and incorrect constructions
  - recognize the most effective revision of a sentence

Proficiency Levels: Mathematics

- **Level 1 -** Students who are proficient can:
  - solve word problems that would most likely be solved by arithmetic and do not involve conversion of units or proportionality. These problems can be multistep if the steps are repeated rather than embedded
  - solve problems involving the informal properties of numbers and operations, often involving the Number Line, including positive and negative numbers, whole numbers and fractions (including conversions of common fractions to percent, such as converting "1/4" to 25%)
  - solve problems requiring a general understanding of square roots and the squares of numbers
  - solve a simple equation or substitute numbers into an algebraic expression

Proficiency Levels: Mathematics

- **Level 2 -** Students who are proficient can:
  - solve arithmetic problems with some complications, such as complex wording, maximizing or minimizing, and embedded ratios. These problems include algebra problems that can be solved by arithmetic (the answer choices are numeric)
  - simplify algebraic expressions, perform basic translations, and draw conclusions from algebraic equations and inequalities. These tasks are more complicated than solving a simple equation, though they may be approached arithmetically by substituting numbers
  - interpret a trend represented in a graph, or choose a graph that reflects a trend
  - solve problems involving sets; problems have numeric answer choices

Proficiency Levels: Mathematics

- **Level 3 -** Students who are proficient can:
  - solve word problems that would be unlikely to be solved by arithmetic; the answer choices are either algebraic expressions or numbers that do not lend themselves to back-solving
  - solve problems involving difficult arithmetic concepts, such as exponents and roots other than squares and square roots, and percent of increase or decrease
  - generalize about numbers (e.g., identify the values of (x) for which an expression increases as (x) increases)
  - solve problems requiring an understanding of the properties of integers, rational numbers, etc.
  - interpret a graph in which the trends are to be expressed algebraically or one of the following is involved: exponents and roots other than squares and square roots, percent of increase or decrease
  - solve problems requiring insight or logical reasoning

Sophomores: RSU and Peers

- Peers N = 27,664
- RSU N = 55
- ETS mandates >50 respondents to generate a report
  - *RSU implemented the abbreviated version*
    - *Each student receives 1/3 of test*
- Peers from Freshman cohort not in Sophomore cohort
  - Lewis-Clark State (ID)
  - Lock Haven University (PA) graduate
  - University of Maine – Fort Kent (ME)
  - University of Maine – Presque Isle (ME)

Comparison of RSU Entering Freshmen to Sophomores

Is there a difference in ETS PP total scores between RSU freshmen and sophomores when controlling for ACT?

H_o: M1 = M2

There is no difference in mean ETS PP total scores as a function of freshman (no gen ed course work) and sophomore status (three semesters of gen ed course work at RSU) when controlling for ACT

where M1 = mean ETS PP total score for fall 2012 sample of entering RSU freshmen
where M1 = mean ETS PP total score for spring 2013 sample of RSU sophomores
Alpha $\leq$ .05; 95% confidence level

Comparison of RSU Entering Freshmen to Sophomores

- **Reject the null hypothesis. There is indeed a difference (increase) in mean ETS PP total score between freshmen and sophomores**
  - Even when controlling for the 0.3 greater sophomore mean ACT score
  - F = 8.871; Critical value of F = 3.949
- **Significant difference at the 99% confidence level**